

WHAT IS CLAIMED IS:

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1. A method of transmitting an ICMP
(Internet Control Message Protocol) data frame to a
transmission source in response to an IP (Internet
Protocol) data frame received from the transmission
10 source when detecting failure regarding the IP data
frame, said method comprising the steps of:

storing information about necessity of
generating the ICMP data frame for each attribute of
the ICMP data frame corresponding to a type of the
15 failure;

determining the necessity of generating
the ICMP data frame by referring to the information
when detecting the failure;

generating the ICMP data frame if it is
20 determined that generation of the ICMP data frame is
necessary; and

transmitting the ICMP data frame to the
transmission source if the ICMP data frame is
generated.

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2. A method of transmitting an ICMP data
30 frame to a transmission source in response to an IP
(Internet Protocol) data frame received from the
transmission source when detecting failure regarding
the IP data frame, said method comprising the steps
of:

35 storing information about necessity of
transmitting the ICMP data frame and a transmission
rate of the ICMP data frame for each attribute of

the ICMP data frame corresponding to a type of the failure;

generating the ICMP data frame when detecting the failure;

5 determining the necessity of transmitting the ICMP data frame by referring to the information;

filtering the ICMP data frame, based on the transmission rate if it is determined that transmission of the ICMP data frame is necessary;

10 and

transmitting the ICMP data frame to the transmission source, if the ICMP data frame is filtered.

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3. A node apparatus transmitting an ICMP data frame to a transmission source in response to an IP data frame received from the transmission source when detecting failure regarding the IP data frame, said node apparatus comprising:

20 an information database storing information about necessity of generating the ICMP data frame for each attribute of the ICMP data frame corresponding to a type of the failure;

25 an information management unit determining the necessity of generating the ICMP data frame by referring to said information database when said node apparatus detects the failure; and

30 a processing unit generating the ICMP data frame if said information management unit determines that generation of the ICMP data frame is necessary,

35 wherein said node apparatus transmits the ICMP data frame to the transmission source if said processing unit generates the ICMP data frame.

4. The node apparatus as claimed in claim 3, further comprising:

a system-condition database storing information about the necessity of generating the
5 ICMP data frame in accordance with a system condition of said node apparatus; and

a system-condition management unit determining the necessity of generating the ICMP data frame by referring to said system-condition
10 database when said node apparatus detects the failure,

wherein said processing unit generates the ICMP data frame if said system-condition management unit determines that the generation of the ICMP data
15 frame is necessary.

20 5. A node apparatus transmitting an ICMP data frame to a transmission source in response to an IP data frame received from the transmission source when detecting failure regarding the IP data frame, said node apparatus comprising:

25 an information database storing information about necessity of transmitting the ICMP data frame and a transmission rate of the ICMP data frame for each attribute of the ICMP data frame corresponding to a type of the failure;

30 a processing unit generating the ICMP data frame when said node apparatus detects the failure;

an information management unit determining the necessity of transmitting the ICMP data frame by referring to said information database; and

35 a filtering unit filtering the ICMP data frame, based on the transmission rate if said information management unit determines that

transmission of the ICMP data frame is necessary,
wherein said node apparatus transmits the
ICMP data frame to the transmission source if the
ICMP data is filtered by said filtering unit.

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6. The node apparatus as claimed in
10 claim 5, further comprising:
a system-condition database storing
information about necessity of generating the ICMP
data frame in accordance with a system condition of
said node apparatus; and
15 a system-condition management unit
determining the necessity of generating the ICMP
data frame by referring to said system-condition
database when said node apparatus detects the
failure,
20 wherein said processing unit generates the
ICMP data frame if said system-condition management
unit determines that generation of the ICMP data
frame is necessary.

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7. A node apparatus transmitting an ICMP
data frame to a transmission source in response to
30 an IP data frame received from the transmission
source when detecting failure regarding the IP data
frame, said node apparatus comprising:
an information database storing
information about necessity of generating the ICMP
35 data frame, necessity of transmitting the ICMP data
frame, and a transmission rate of the ICMP data
frame for each attribute of the ICMP data frame

corresponding to a type of the failure;

an information management unit determining the necessity of generating the ICMP data frame, the necessity of transmitting the ICMP data frame, and
5 the transmission rate, by referring to said information database when said node apparatus detects the failure;

a processing unit generating the ICMP data frame if said information management unit determines
10 that generation of the ICMP data frame is necessary; and

a filtering unit filtering the ICMP data frame generated by said processing unit, based on the transmission rate if said information management
15 unit determines transmission of the ICMP data frame is necessary,

wherein said node apparatus transmits the ICMP data frame to the transmission source if the ICMP data frame is filtered by said filtering unit.
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8. The node apparatus as claimed in
25 claim 7, further comprising:

a system-condition database storing information about the necessity of generating the ICMP data frame in accordance with a system condition of said node apparatus; and

30 a system-condition management unit determining the necessity of generating the ICMP data frame by referring to said system-condition database when said node apparatus detects the failure,

35 wherein said processing unit generates the ICMP data frame if said system-condition management unit determines that the generation of the ICMP data

is necessary.

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9. The node apparatus as claimed in claim 8, wherein said system-condition database further storing information about the necessity of transmitting the ICMP data frame and the
10 transmission rate of the ICMP data frame in accordance with the system condition, said system-condition management unit determines the necessity of transmitting the ICMP data frame by referring to said system-condition database, and said filtering
15 unit filters the ICMP data frame generated by said processing unit, based on the transmission rate if said system-management unit determines that the transmission of the ICMP data frame is necessary.

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10. The node apparatus as claimed in claim 7, further comprising:

25 a line-condition database storing information about the necessity of generating the ICMP data frame in accordance with a condition of a line connecting said node apparatus and a destination of the IP data frame; and

30 a line-condition management unit determining the necessity of generating the ICMP data frame by referring to said line-condition database when said node apparatus detects the failure,

35 wherein said processing unit generates the ICMP data frame if said line-condition management unit determines that the generation of the ICMP data

is necessary.

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11. The node apparatus as claimed in
claim 10, wherein said line-condition database
further storing information about the necessity of
transmitting the ICMP data frame and the
10 transmission rate of the ICMP data frame in
accordance with the line condition, said line-
condition management unit determines the necessity
of transmitting the ICMP data frame by referring to
said line-condition database, and said filtering
15 unit filters the ICMP data frame generated by said
processing unit, based on the transmission rate if
said line-management unit determines that the
transmission of the ICMP data frame is necessary.